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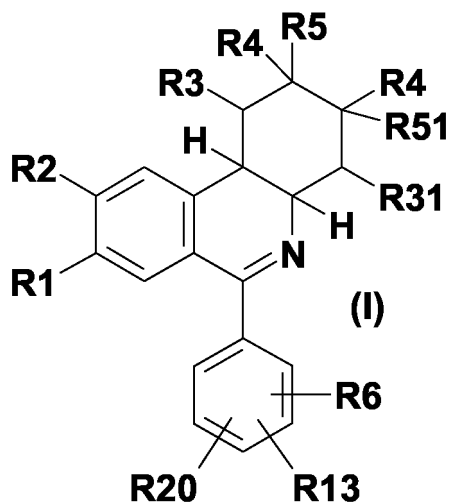
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(54) **6-Phenylphenanthridines with PDE-IV inhibiting activity**

(57) Compounds of the formula I,

in which R1, R2, R3, R31, R4, R5, R51, R6, R13 and R20 have the meanings indicated in the description, are novel active bronchial therapeutics.

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EUROPEAN SEARCH REPORT

Application Number
EP 05 10 8689

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y,D	WO 97/35854 A (BYK GULDEN LOMBERG CHEM FAB ;GUTTERER BEATE (DE)) 2 October 1997 (1997-10-02) * claim 1 *	1-24	C07D221/12 A61K31/435
Y,D	WO 97/28131 A (BYK GULDEN LOMBERG CHEM FAB ;GUTTERER BEATE (DE)) 7 August 1997 (1997-08-07) * claim 1 *	1-24	
Y	WO 98/21208 A (BYK GULDEN LOMBERG CHEM FAB ;FLOCKERZI DIETER (DE)) 22 May 1998 (1998-05-22) * claim 1 *	1-24	
A	US 3 899 494 A (OTT HANS ET AL) 12 August 1975 (1975-08-12) * column 1 *	1-24	
			TECHNICAL FIELDS SEARCHED (IPC)
			C07D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 February 2006	Examiner Steendijk, M
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 10 8689

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The members are as contained in the European Patent Office EDP file on
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20-02-2006

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9735854	A	02-10-1997	AT 224386 T	15-10-2002
			AU 718752 B2	20-04-2000
			AU 2291097 A	17-10-1997
			CA 2250569 A1	02-10-1997
			CY 2431 A	12-11-2004
			DK 889886 T3	20-01-2003
			ES 2184077 T3	01-04-2003
			JP 2000507256 T	13-06-2000
			PT 889886 T	28-02-2003

WO 9728131	A	07-08-1997	AT 233735 T	15-03-2003
			AU 1719997 A	22-08-1997
			BR 9707233 A	20-07-1999
			CA 2245142 A1	07-08-1997
			CY 2473 A	03-06-2005
			CZ 9802414 A3	16-12-1998
			DK 882021 T3	23-06-2003
			EA 1205 B1	25-12-2000
			EE 9800223 A	15-12-1998
			ES 2194180 T3	16-11-2003
			HU 9900666 A2	28-06-1999
			JP 2000503996 T	04-04-2000
			PT 882021 T	31-07-2003
			US 6191138 B1	20-02-2001

WO 9821208	A	22-05-1998	AT 234300 T	15-03-2003
			AU 733129 B2	10-05-2001
			AU 5317098 A	03-06-1998
			BG 63695 B1	30-09-2002
			BG 103310 A	31-05-2000
			BR 9713338 A	09-05-2000
			CA 2270964 A1	22-05-1998
			CN 1236367 A	24-11-1999
			CY 2476 A	03-05-2005
			CZ 9901675 A3	17-11-1999
			DK 937074 T3	23-06-2003
			EA 1551 B1	23-04-2001
			EE 9900105 A	15-10-1999
			ES 2195189 T3	01-12-2003
			HK 1022151 A1	08-08-2003
			HU 0000426 A2	28-02-2001
			ID 22042 A	26-08-1999
			IL 129054 A	25-07-2002
			JP 2001503442 T	13-03-2001
			KR 2000053100 A	25-08-2000
			NO 992282 A	11-05-1999

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 10 8689

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-02-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9821208	A	NZ 334976 A	27-10-2000
		PL 333429 A1	06-12-1999
		PT 937074 T	31-07-2003
		SK 62399 A3	08-10-1999
		TR 9900856 T2	21-07-1999
		US 6008215 A	28-12-1999

US 3899494	A	12-08-1975	NONE
